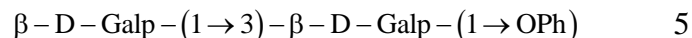


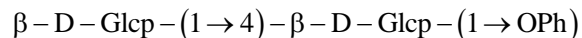
[2]

2. a) Answer (i) or (ii) :

i) Synthesise the following disaccharide glycoside starting with the corresponding native monosaccharides.



ii) Starting with the native sugar and utilizing 'Two stage glycosylation technique' synthesise :

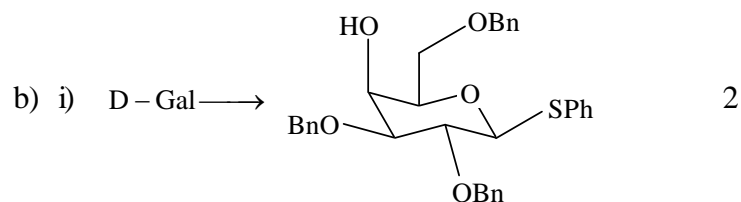


b) What is meant by 'Armed-Disarmed' donors ? Explain with suitable examples and the corresponding glycosylation reaction. (synthesis of 'armed' and 'disarmed' donors is not necessary). $2\frac{1}{2}$

c) How can D-glucose be converted to its corresponding 2-deoxy sugar ? $1\frac{1}{2}$

3. Carry out the following transformations :

a) L-Rha \longrightarrow L-Daunosamine 5



ii) Write the IUPAC nomenclature of the product obtained from D-Gal in the above transformation. 1

[3]

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4. a) How are β -bend structures formed in protein ? What is ' $\beta\alpha\beta$ ' motif ? Mention its biological importance.

 $1+\frac{1}{2}+1$

b) How are helices formed ? Discuss the major differences between an α -helix and a π -helix. $\frac{1}{2}+2$

c) Describe a method for the determination of the position of S-S-(disulfide) bonds in a protein. 2

5. a) 2-Bromoethylamine reacts with cysteine side chains in a protein to form S-aminoethyl derivatives. The peptide bond on carboxyl site of the modified cysteine residues becomes susceptible to hydrolysis by trypsin – Why ?

 $1\frac{1}{2}$

b) What is collagen ? Discuss its structural features. Mention the role of vitamin C in the stabilization of collagen fibre ?

 $\frac{1}{2}+2+1$

c) What is MRE ? Why is near UV-CD spectrum very important to detect the correctly folded structure of a protein ? $1+1\frac{1}{2}$

6. a) What is Ramachandran diagram ? Show the regions of allowed conformations of poly-L-alanine in this diagram.

 $1+2$

[Turn over